Supreme Court, U.S.
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In The
Supreme Court of the United States

M-3 & ASSOCIATES, INC.,

*Petitioner,*

v.

CARGO SYSTEMS, INC., and
PREFERRED FINISHING, INC.,

*Respondents.*

ON PETITION FOR WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

# PETITION FOR WRIT OF CERTIORARI

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51 pp

## THE QUESTION PRESENTED FOR REVIEW:

In the context of construing the claims of a patent to determine if the subject matter of the claims is novel or anticipated by the prior art, should extraneous limitations appearing in the specification of the patent be read into the claims such that the claims are then redefined by the examples given in the specification?

## THE PARTIES TO THE CASE

All of the parties to the proceedings before the United States Court of Appeals for the Federal Circuit are identified in the present caption.

Pursuant to Rule 29.6 of this Court, Petitioner, M - 3 & Associates, Inc., states that it has no parent corporation and that no publicly held company holds 10% or more of its corporate stock.

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## CITATIONS, JURISDICTION AND STATUTES

At present, there are no known citations to reporters of the opinions and orders entered in this case.

This Court has jurisdiction in this case since:

1. The Order of the United States Court of Appeals for the Federal Circuit sought to be reviewed herein was entered on April 2, 2002;

2. The Order respecting rehearing of that April 2 Order was entered on June 11, 2002; and

3. Jurisdiction is conferred on this Court under 28 U.S.C. §1254 since this is on petition for a writ of certiorari to review a case before a United States court of appeals.

35 U.S.C. §112, ¶s 1 and 2 are involved in this case and state:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.
>
> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

## STATEMENT OF THE CASE

This case is an action for patent infringement between the nation's two largest manufacturers of counterbalanced ramp door closure systems. The suit was originally brought in the United States District Court for the Northern District of Indiana, that court having subject matter jurisdiction under 28 U.S.C. §§1331 and 1338. The District Court entered a final judgment order on a summary judgment motion by Defendants, and that judgment was appealed to the United States Court of Appeals for the Federal Circuit, the court of appeals having jurisdiction to review that judgment under 28 U.S.C. §1295(a)(1).

U.S. Patent 5,768,828, a copy of which is included in the Appendix, is alleged to be infringed. That patent claims a counterbalanced door closure system having at least two spring elements connected to cables and wherein "each spring element is tensioned so as to be able to independently restrain the door against opening once the door is in a closed position."

Defendants alleged that patent was not validly issued because of prior art showing a counterbalancing door closure system having two spring elements connected to cables wherein each spring element is tensioned so as to be able to independently restrain the door against motion once the door is already opened or in the process of being opened.

Before the Court of Appeal, the primary issue was whether or not a genuine issue of material fact exists as to if the springs of the prior art reference also independently "restrain the door against opening once the door is in a closed position." In resolving that issue, the Court of Appeals noted that in the specification of the patent an example was given of the invention functioning both if the spring breaks when the door is in a closed position and if the spring breaks when the door (is already opened in part and) is being opened or closed. See page 5 of the April 2, 2002 Order, included in the Appendix, citing the '828 patent at

col. 4, lines 30-37. The Court of Appeals then immediately merged both breakage situations and construed the "independent spring restraint feature" of the claim to require that the springs "reduce the force with which the ramp door swings open." Since the prior art reference was then found by the Court of Appeals to contain that feature, Court of Appeals considered no material issue of fact to be present and upheld the summary judgment of patent invalidity.

However, the words of the claim do not themselves describe the function of the springs when the ramp door swings open. Instead, the words of the claim describe only what happens "once the door is in a closed position." The prior art device in question had a slack cable once the door was in a closed position and, thereby, could not exert the required restraint force on the door when it was in that position (see pages 5 - 6 of the April 2, 2002 Order). The construction of given to the claim by the Court of Appeals sidesteps that deficiency in the prior art by looking to the operation of the door when it is in the process of opening, when the door swings open. In effect, what the Court of Appeals did was to incorporate the limitations of the specification's example into the claim and change its meaning. Once that meaning was changed, the patent claim was found to read on the prior art and become invalid.

## ARGUMENT FOR ALLOWANCE OF THE WRIT

The decision of the Court of Appeals directly conflicts with long established decisions of this Court and with the controlling precedent of the Court of Appeals for the Federal Circuit. In doing so, the Court of Appeals has so far departed from the accepted and usual course of judicial proceedings on an important issue of patent law procedure as to call for an exercise of this Court's supervisory power.

It is clear that construction of the claims of a patent to determine the meaning of the claims is a question of law to be determined by the courts. Markman v. Westview

Instruments, Inc., 517 U.S. 370 (1996). However, in so construing the claims, this Court has, at least since 1895, held that the specification is not to be "read into" the claims, explaining:

> "[W]e know of no principle of law which would authorize us to read into a claim an element which is not present, for the purpose of making out a case of novelty or infringement. The difficulty is that if once we begin to include elements not mentioned in the claim ..., we should never know where to stop."

McCarty v. Lehigh Valley R.R. Co., 160 U.S. 110, 116 (1895).

This important principle of patent law has often been reiterated by this Court since then. See, e.g., Smith v. Snow, 294 U.S. 1, 11-12 (1935)(specification defines detailed example but the arrangement of that example is not to be imported into the claims); General Electric Co. v. Wabash Co., 304 U.S. 364, 374 (1938)(rejecting "improper importation into the claim of a factor nowhere describe there"); and United States v. Adams, 383 U.S. 39, 49 (1966)(claims are to be read in light of the specification, but the specification is not to be used to expand the meaning of the claims). Indeed, this doctrine of McCarty continues to be cited in reported opinions of the Court of Appeals for the Federal Circuit. See, e.g., Biovail Corp. Int'l v. Andrx Pharmaceuticals, Inc., 239 F. 3d 1297, 1301 (Fed. Cir. 2001)(citing McCarty for the rule that "as a general proposition, a limitation that does not exist in a claim should not be read into that claim")

In its controlling precedents, the Court of Appeals for the Federal Circuit has fully understood that "it is the function and purpose of the claims" and not of the "written description part of the specification itself, " "to delimit the right to exclude." Markman v. Westview Instruments, Inc., 52 F. 3d 967, 980 (Fed. Cir. 1995)(en banc), aff'd, 517 U.S. 370 (1996). For many years, the reported decisions of the Court of Appeals for the Federal Circuit have confirmed that

a primary canon of claim construction is "one may not read a limitation into a claim from the written description." Renishaw PLC v. Marposs Societa' Per Azioni, 156 F. 3d 1182, 1184 (Fed. Cir. 1998). See, also, Hoganas AB v. Dresser Industries, Inc., 9 F. 3d 948, 950 (Fed. Cir. 1993)("It is improper for a court to add 'extraneous' limitations to a claims, that is, limitations added 'wholly apart from any need to interpret what the patentee meant by particular words or phrases in the claim'"); Intel Corp. v. U.S. Int'l Trade Comm'n, 946 F. 2d 821, 836 (Fed. Cir. 1991)("where a specification does not *require* a limitation, that limitation should not be read from the specification into the claims"); Intervet America, Inc. v. Kee-Vet Laboratories, Inc., 887 F. 2d 1050, 1053 (Fed. Cir. 1989)("courts cannot alter what the patentee has chosen to claim as his invention, .... limitations appearing in the specification will not be read into the claims, ... interpreting what is *meant* by a word *in* a claim 'is not to be confused with adding an extraneous limitation appearing in the specification, which is improper.'"); E.I. duPont & Co. v. Phillips Petroleum Co., 849 F. 2d 1430 (Fed. Cir. 1989). As indicated in principle patent treatises, this claim construction procedure is well accepted as the proper rule. See, e.g., Chisum, *Chisum on Patents*, Vol. 5a, §18.03[2][c][i], 2002.

However, in the present case, this rule of claim construction was ignored, not even cited in passing. The present case is not a situation where the patentee acted as a lexicographer to create unusual term meanings or defined the terms inconsistently in the specification. Compare, Genentech, Inc. v. The Wellcome Foundation Ltd., 29 F. 3d 1555 (Fed. Cir. 1994)(four inconsistent definitions of the claimed substance in the specification). This is also not a case where the claims were expressed in a "means plus function" format, such that reference to the claim was needed to define the equivalent structure. Compare, Kahn v. General Motors Corp., 135 F. 3d 1472, 1476 (Fed. Cir. 1998). This is not a situation where the term "closed" or the

phrases "in a closed position" and "against opening once the door was in a closed position" were at all ambiguous and required even reference to a dictionary. The only use of a dictionary by the Court of Appeals in this case was with respect to the word "restrain."

Instead, what happened here was that the claims described the function of the invention "once the door was in a closed position," and the specification gave an example of a possible construction of the invention and then described the function of that construction both when the door was in a closed position, where the "door will remain closed," and then when the "door is being opened or closed," where the "door will open to the open position, but with less force." See the '828 patent, starting at Appendix page A-30, paragraph 4. By redefining the claims to include both situations within the meaning of "a closed position," the Court of Appeals changed the meaning of "against opening" from its literal meaning to instead mean: some opening movement is not restrained, but some movement is restrained if the door is being swung open. In other words, the Court of Appeals redefined "a closed position" to include both open and closed positions. This new interpretation has the effect of substantially broadening the scope of the claim to cover subject matter that is in the prior art, contrary to the patentee's stated intentions.

The claim construction procedure employed by the Court of Appeals in this case would render the patent claims unnecessary. As noted by this Court in Markman, 517 U.S., at 373, the specification of the patent and the claims of the patent are "two distinct elements" having two different functions. 35 U.S.C. §112, ¶s 1 and 2 requires the patentee to both particularly point out and distinctly claim the subject matter of his invention and to describe the best mode for making and using that invention. If the best mode were to become construed as the claim, then of what purpose is the claim?

This is not a situation where the Court of Appeals misapplied a properly stated rule of law. No citation to prior case law or any other authority was given by the Court of Appeals in its Order for including the extraneous material into the claims. This omission is not considered to be an isolated aberration, confined only to Petitioner's case. Several commentators have noted a recent trend on the part of the Court of Appeals to redefine claim scope by importing as limitations the embodiments from the specification. See, e.g., Harmon, *Patents and the Federal Circuit, 5th Ed.*, 2002 Supplement, pages 38 - 39; Radulescu, "The Federal Circuit's Narrowing of the Literal Scope of Patent Claims by Focussing on Embodiments Disclosed in the Specification," 82 J. Pat. & Trademark Off. Soc'y 539, August 2000. This trend would be a substantial and unwarranted change in the procedures used to construe patent claims.

## CONCLUSION

Accordingly, this petition should be granted to correct the erroneous claim construction procedure used in the present case and to curtail such a change in the procedures used to construe patent claims.

September 9, 2002

Respectfully submitted,

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# APPENDIX

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3. Order of June 11, 2002,
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4. U.S. Patent 5,768,828 ..... A -22 to A - 37

NOTE: Pursuant to Fed. Cir. R. 47.6, this disposition is not citable as precedent. It is a public record. This disposition will appear in tables published periodically.

**United States Court of Appeals for the Federal Circuit**

**00-1572**

**M-3 & ASSOCIATES, INC.,**

**Plaintiff-Appellant,**

**v.**

**CARGO SYSTEMS, INC. and PREFERRED FINISHING, INC.,**

**Defendants-Appellees.**

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**ENTERED: April 2, 2002**

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Before MAYER, Chief Judge, BRYSON, and DYK, Circuit Judges.

DYK, Circuit Judge.

This case involves a suit for infringement of U.S. Patent No. 5,768,828 (the "'828 patent"). The central question is whether the on-sale bar rule invalidates all the claims of the patent because an earlier version of the device accused of infringement was sold more than one year before the filing of the '828 patent application. M-3 & Associates, Inc. ("M-3"), the patentee, appeals the district court's grant

of summary judgment finding all the claims of the patent invalid. M-3 also objects to the district court's grant of a motion to strike, which excluded some of M-3's evidence submitted in response to Cargo Systems, Inc., and Preferred Finishing, Inc.'s (collectively, "Cargo") motion for summary judgment. Finally, M-3 complains that the district court improperly considered evidentiary materials accompanying Cargo's summary judgment reply brief, urging that such consideration violated due process. We affirm.

I

Cargo and M-3 compete in the market for counterbalancing mechanisms that increase the 'safety of ramp doors by preventing the doors from opening with great force. Counterbalances work so that the springs are tensioned to impart torque on the drive shaft and spools, such that the torque generates the counterbalancing force on the cables. Each coil spring independently provides some portion of the total torque. The amount of torque required is different depending on the height and weight of the ramp door. The number of turns each spring is given determines the level of torque, although this level can be manually adjusted by changing the number of turns in a spring.

M-3 is the assignee of the '828 patent. The invention of the '828 patent involves two redundant springs that independently support the weight of the door and prevent the door from opening abruptly, even if one spring fails. '828 patent, col. 1, 11. 58-67. Cargo makes the accused dual-spring device, which is marketed under the trademark "Ramp-Heister."

The only independent claim of the patent is at issue and provides:

1. An apparatus closing an opening in a wall, comprising:

a door member hinged to the wall adjacent the bottom of the opening so as to permit upward pivotal movement of the door member to close the opening,a plurality of cables attached to the door member and connected to the wall adjacent the top of the opening,counterbalancing means, connected to the wall adjacent the top of the opening, for applying force to the cables to at least in part counterbalance the weight of the door member and thereby facilitate movement of the door member about the hinge, and the counterbalancing means including at least two spring elements, each of which independently applies a portion of the force to each of the cables, wherein each spring element is tensioned so as to be able to independently restrain the door against opening once the door is in a closed position.

'828 patent, col. 4, I. 54 - col. 5, I. 3 (emphasis added).

Cargo claims that the '828 patent is invalid under the on-sale bar provision. An invention is subject to the on-sale bar if it "was . . . on sale in this country, more than one year prior to the date of the application for patent in the United States." 35 U.S.C. § 102(b) (1994). Since the patent application was filed on May 30, 1996, the critical date is May 30, 1995.

In order to be subject to the on-sale bar, "the invention that is the subject matter of the offer for sale must satisfy each claim limitation of the patent, though it may do so inherently." Scaltech, Inc. v. Retec/Tetra, LLC., 269 F.3d 1321, 1329, 60 USPQ2d 1687, 1692 (Fed. Cir. 2001).

## II

In late March or early April 1994, Cargo sold to Haulmark (a trailer manufacturer) a dual-spring counterbalance. The parties only dispute whether the device sold to Haulmark in 1994 contained the "independent spring restraint feature" of the '828 patent.

In granting summary judgment, the district court concluded that "the claimed invention of M-3 had been sold by Cargo at least one year prior to the application for patent," M-3 & Assocs., Inc. v. Cargo Sys., Inc., No. 3:99CV547 AS, slip op. at 11 (N.D. Ind. Aug. 11, 2000), invalidating all the claims of the '828 patent under 35 U.S.C. § 102(b).

## III

M-3 contends that there is a genuine dispute of material fact as to whether Cargo's Model A contains the key limitation: "the counterbalancing means . . . wherein each spring element is tensioned so as to be able to independently restrain the door against opening once the door is in a closed position" (the "independent spring restraint feature"). '828 patent, col. 4, l. 65 - col. 5, l. 3.

First, we must construe the key limitation in claim 1 of the '828 patent. Claim construction is a matter of law that we review without deference. Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1455, 46 USPQ2d 1169, 1174 (Fed. Cir. 1998) (en banc). Claim language must be interpreted in light of the specification and prosecution history. Biovail Corp. Int'l v. Andrx Pharms., Inc., 239 F.3d 1297, 1301, 57 USPQ2d 1813, 1816 (Fed. Cir. 2001).

M-3 suggests that the claim should be construed so that the springs act to restrain the door against any "opening." Appellant's Reply Br. at 8-9. On the other hand, Cargo argues that each spring must be independently

tensioned so as to "limit or restrict the door from opening once it is closed," but not "to restrict the door from any movement whatsoever." Appellees' Br. at 20-21. We agree with Cargo's claim interpretation.

The language of the claim requires that the device "restrain the door against opening." The dictionary definition of "restrain" includes both "prevent" and "moderate or limit the force." Webster's Third New International Dictionary 1936 (1968). This definition supports the view that the claim limitation encompasses restricting the door from opening, without restraining the door against any opening. The specification also indicates that Cargo's broader definition was valid:

> [The] door remains partially counterbalanced even in the event that one spring breaks so that a closed door will remain closed instead of dropping immediately to the open position. Furthermore, if a spring breaks when door is being opened or closed, door will open to the open position, but with less force than would be the case using a single spring system, an important safety feature of the present invention.

'828 patent, col. 4, ll. 30-37 (numbering omitted) (emphasis added).

The specification focuses on the safety aspect of decreasing the force associated with opening ramp doors. As long as the door is at, least partially counterbalanced against opening, this feature is achieved. In light of the claim language and the specification, we construe the "independent spring restraint feature" as requiring two springs that are independently sufficient to counterbalance the door and reduce the force with which the ramp door swings open, although each spring acting alone does not have to restrict the door from any movement whatsoever.

## IV

M-3 urges that the alleged prior art product (Cargo's model A) differs from M-3's claimed invention, contending that the alleged prior art product does not contain the "independent spring restraint feature," and the. latter product does. We disagree.

The record evidence shows that Cargo's Model A satisfied the key limitation of the '828 patent. M-3's theory is that Cargo's Model A did not satisfy the claim limitation because slackness in the cable did not provide the necessary restraint. To determine that the limitation was present in Cargo's Model A, the district court relied on Cargo's installation instructions and the testimony of John Coble, CEO of Cargo Systems, Inc. M-3, slip op. at 9-10. The Coble affidavit shows that Cargo sold a dual-spring Ramp-Heister to Haulmark in 1994. Coble Aff. ¶ 8. Cargo's installation instructions accompanying the 1994 device identified the appropriate number of turns of the springs to counterbalance doors of various ramp heights. The Coble affidavit also confirms the information provided in the instructions. Id. ¶ 5. However, neither the instructions nor the affidavit sheds any light on whether Cargo's Model A satisfied the limitation in claim 1.

1. Videotape A, which was made part of the summary judgment record by the patentee, does show the restraint feature in operation. In Cargo's Model A, the 1994 device, the cable and springs do not actually restrain the door against opening until the door has. opened several inches, indicating a somewhat slack cable. Although the videotape does not show Cargo's Model A acting identically to M-3's claimed invention with respect to the tension of the cables, the district court correctly found that Cargo's Model A satisfied the disputed claim limitation of the '828 patent, counterbalancing

the door and reducing the force with which the ramp door swings open. There is no contrary evidence in the record.

V

M-3 urges that the district court improperly excluded the audio portions of two videotapes and paragraph 3 of the Wilson declaration, demonstrating that there was a genuine issue of material fact regarding whether the key limitation was present in Cargo's Model A.

"We review evidentiary rulings of the district court for abuse of discretion, and interfere with its judgment only if an erroneous ruling prejudiced substantial rights." Applied Med. Res. Corp. v. United States Surgical Corp., 147 F.3d 1374, 1380, 47 USPQ2d 1289, 1293 (Fed. Cir. 1998), cert. denied, 525 U.S. 1104 (1999)[1]. The videotapes contained audio commentary of Mr. Wilson, the president of M-3, and Mr. Fountain, M-3's attorney, describing the operation of Cargo's Model A as compared with the claimed invention. Whether or not the district court properly granted Cargo's motion to strike, none of this excluded evidence would have affected the outcome of the motion for summary judgment because the excluded material confirmed the on-sale bar. The audio commentary by Mr. Wilson and Mr. Fountain admitted that Cargo's Model A limited the force of the door after the door had initially opened several inches. Moreover,

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[1] This court applies the law of the regional circuit when we review evidentiary rulings of the district court. See Advanced Cardiovascular Sys., Inc. v. Medtronic, Inc., 265 F.3d 1294, 1308, 60 USPQ2d 1161, 1171 (Fed. Cir. 2001) ("Evidentiary rulings . . . are not unique to our jurisdiction and, accordingly, we review them under the law of the [regional circuit]."). Seventh Circuit law requires that we review evidentiary rulings for an abuse of discretion. See Rehling v. City of Chicago, 207 F.3d 1009, 1017 (7th Cir. 2000) ("We review the rulings of a district court regarding admissibility of evidence for an abuse of discretion. . . . If we determine that the district court has abused its discretion in making an evidentiary ruling, we nonetheless affirm the district court if the erroneous ruling is determined to be harmless.") (citations omitted).

in paragraph 3 of Wilson's declaration, Mr. Wilson, while stating that Cargo's Model A "did not have the spring elements tensioned so as to be able to independently restrain the door against opening once the door is in a closed position," also conceded that there is at least a partial restraint, stating that "in (Cargo's Model A] the drum does not move at all until the door is opened several inches, indicating a significant amount of slack in the cable tension." Wilson Decl. ¶ 3. Applying the appropriate interpretation of the key limitation, both the audio commentary and Wilson's declaration support the district court's finding that Cargo's Model A satisfied the key limitation of claim 1 of the '828 patent. Therefore, we conclude that any error the district court made in excluding the evidence did not prejudice M-3's rights and would be at most harmless error.

VI

Lastly, M-3 urges that the district court should not have considered the evidentiary materials contained in Cargo's summary judgment reply brief because they raised new allegations and did not give M-3 a chance to respond. However, we agree with Cargo that this evidence submitted with the reply brief only responded to the issues raised by appellant, rather than raising new issues. Beck v. Univ. of Wis. Bd. of Regents, 75 F.3d 1130, 1134 n.* (7th Cir. 1996). As such, there is no procedural unfairness.

CONCLUSION

For the foregoing reasons, we affirm.

COSTS

No costs.

UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF INDIANA
SOUTH BEND DIVISION

M-3 & ASSOCIATES, INC. )
Plaintiff, )
)
v. )
)
CARGO SYSTEMS, INC. and )
PREFERRED FINISHING, INC. )
Defendants. )
)
) CASE NO. 3:99CV547 AS
CARGO SYSTEMS, INC. and )
PREFERRED FINISHING, INC. )
Counter-Plaintiffs, )
v. )
)
M-3 & ASSOCIATES, INC. )
Counter-Defendant. )

**ENTERED: August 11, 2000**

## MEMORANDUM AND ORDER

## I. PROCEDURAL HISTORY

This cause is before the court on the motion by defendants Cargo Systems, Inc., and Preferred Finishing, Inc. ("Cargo") for summary judgment, filed June 30, 2000. Plaintiff M-3 & Associates, Inc.("M-3") filed their response on July 18, 2000, and defendants replied to the response on July 25, 2000. Additionally, Defendants filed a motion to strike on July 25, 2000, which was not responded to and is hereby granted.

## II. FACTS

Plaintiff M-3, and Defendant Cargo, design, manufacture, and sell counterbalances to cargo trailer manufacturers. M-3 filed this case alleging that it has a valid patent and that Cargo is infringing upon its patent. The patent itself involves a dual spring torsion counterbalance—a spring system-- that is used to assist with the opening and closing of a ramp door.

Both M-3 and Cargo are Indiana corporations, with their principle place of business in Elkhart, Indiana. M-3 is in the business of making and selling torsion spring (single and dual) counterbalances for ramp door cargo trailers. (Complaint, ¶ 1). Cargo is also in the business of designing, manufacturing, and selling single and dual counterbalances for ramp door cargo trailers. (Aff. J. Coble, CEO for Cargo; ¶ 1). Preferred Finishing, Inc. is an Indiana corporation, with offices in Elkhart, Indiana. (Complaint, ¶ 2). Preferred is in the business of fabricating products for various entities, including the counterbalance for Cargo. (Dep. of T. Klusczinski, Preferred's President; pp. 10, 15-16).

On May 30, 1996, Randy Wilson, President of M-3, filed a patent application with the United States Patent Office. (Complaint,' 7). On June 23, 1998, the application was granted as U.S. Patent No. 5,768,828. (Id.). Cargo claims that they designed, manufactured, and sold at least five dual spring counterbalances more than one year prior to the date that M-3 applied for its patent. 35 U.S.C. § 102(b), states:

> A person shall be entitled to a patent unless-
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States,

Pursuant to 35 U.S.C. § 102(b), if proven that Cargo designed, manufactured, and sold the counterbalances, which M-3 claims patent over, at least one year prior to the application for the patent of those counterbalances by M-3, then there is no genuine issue of material fact and summary judgment will be granted. However, if it is not found as such then a genuine issue of material fact does exist and summary judgment will be denied.

**A. Description**

Cargo sells its counterbalance under the trademark "Ramp-Heister". (Aff. of J. Coble, ¶ 1). The Ramp-Heister consists of a few basic components: (1) drive shaft; (2) spring(s); (3) cable drums/spools; (4) cables; (5) miscellaneous hardware - - brackets, bushings, and collars - - used to attach the components to one another. (*Id.* , ¶ 2). The springs on the Ramp-Heister are tensioned (wound) to impart torque on the drive shaft and spools. (*Id.*, ¶ 3). The torque on the drive shaft and spools generates the counterbalancing force on the cables. (*Id.*). Each coil spring independently provides some portion of the total torque of the counterbalance. The torque provided by each separate spring is independent of the other, but is used in conjunction with the other, to produce the total torque required to counterbalance the weight of the ramp door as it is manually raised and lowered between its closed and opened positions. (*Id.*).

When the ramp door is lifted toward its closed position, the drive shaft turns to wind the cable onto the spools. (*Id.* ¶ 4). As the drive shaft turns to wind the cables, the coil springs around the drive shaft are unwound to progressively decrease the counterbalancing force as the door closes. (*Id.*). When the ramp door is pulled downward toward its open position, the drive shaft turns to unwind the cables from the spools. (*Id.*). As the drive shaft turns to unwind the cables, the coil springs around the drive shaft are

wound to progressively increase the counterbalancing force as the door opens. (*Id.*).

When a dual spring Ramp-Heister is installed the springs are initially wound. The torque required is different for each trailer depending upon, among other things, the height and weight of the ramp door. (*Id.*). The number of turns each spring is given is calculated to provide sufficient torque to: (1) adequately counterbalance the weight of the door during operation; and (2) keep residual force on the cables, which keeps them taut on the spools when the ramp door is closed (*Id.*). The force provided by the torque in each spring also restrain the door from opening when the door is in a closed position. (*Id.*). The torque can be mechanically adjusted to increase or decrease the counterbalancing and residual force on the cables by manually adding or subtracting turns from each spring. (*Id.*).

**B. History**

In 1989, John Coble, CEO of Cargo, designed and began manufacturing and selling the Ramp Heister. (*Id.* ¶ 6). The original design used a single coil spring, however, in the early 1990's, cargo trailer manufacturers began producing larger trailers with taller and heavier ramp doors. Applying his experience with the dual spring counterbalances in the garage door industry, Coble designed a dual spring Ramp-Heister to better accommodate the larger trailers. (*Id.*). Cargo claims to have designed and sold at least five dual spring counterbalances before M-3 filed its application for patent in May 1996. However, the sale from Cargo to Haulmark is the main one in question. M-3 claims the model Cargo designed and sold before 1996 was not identical to their invention. They further state that it was not until after the application for a patent had been filed in 1996 by M-3 that Cargo began designing and selling the same model.

## III. ANALYSIS

Summary judgment is proper if the pleadings, depositions, answers to interrogatories and admissions on file, together with any affidavits, show that there exists no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law. FED.R.Civ.P. 56(c); *Celotex Corp v. Catrett*, 477 U.S. 317 (1986); *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242 (1986); *Bragg v. Navistar Int'l Trans. Corp.*, 164 F.3d 373 (7th Cir. 1998). *Celotex* addressed the initial burdens of the parties under Rule 56, and Anderson addressed the standards under which the record is to be analyzed within the structure of Rule 56.

The initial burden is on the moving party to demonstrate, "with or without supporting affidavits," the absence of a genuine issue of material fact and that judgment as a matter of law should be granted in the moving party's favor. *Celotex,* 477 U.S. at 324 (quoting FEDRCiv.P. 56); *Larimer v. Dayton Hudson Corp.,* 137 F.3d 497 (7th Cir. 1998). A question of material fact is a question which will be outcome determinative of an issue in the case. The Supreme Court has instructed that the facts material in a specific case shall be determined by the substantive law controlling the given case or issue. *Anderson,* 477 U.S. at 248. Once the moving party has met the initial burden, the opposing party must "go beyond the pleadings" and "designate 'specific facts shows that there is a genuine [material] issue for trial.'" *Id.* The nonmoving party cannot rest on its pleadings, *Weicherding v. Riegel*, 160 F.3d 1139 (7th Cir. 1998); *Waldridge v. American Hoechst Corp.,* 24 F.3d 918 (7th Cir. 1994); nor may that party rely upon conclusory allegations in affidavits. *Smith v. Shawnee Library Sys.*, 60 F.3d 317, 320 (7th Cir. 1995).

During its summary judgment analysis, the court must construe the facts and draw all reasonable inferences in

the light most favorable to the nonmoving party. *Bombard v. Fort Wayne Newspapers, Inc.*, 92 F.3d 560 (7th Cir. 1996). Furthermore, it is required to analyze summary judgment motions under the standard of proof relevant to the case or issue. *Anderson*, 477 U.S. at 252-55. Applying the above standard, this Court addresses defendants' motion.

The Defendants claim that by Plaintiffs silence they have conceded that the Haulmark trailer contains each and every element set forth in claim 1 (lines 1-14), as well as the subject matter of claims 2, 3, and 4. In *Johnson v. Gudmundsson,* 350F.3d 1104 (7th Cir. 1994), it was stated that if a nonmovant fails to respond to motion for summary judgment, this constitutes an admission that the factual issues are undisputed and do not require trial, which may result in a judgment being issued against the nonmovant. By not responding in its entirety, Plaintiff admitted to many material facts as presented by Defendant and forfeited an opportunity to elaborate on theories in his complaint. The Plaintiff states some disagreement with some of the material facts but essentially claims only three genuine issues of material fact to be argued.

Before discussing each claim it must first be explained that M-3 is arguing that Cargo has manufactured two entirely different models (A & B) of their Ramp-Heister. M-3 claims that the model shown in videotape A ("A") is the model manufactured and sold to Haulmark before 1995 and that the model shown in videotape B ("B") is their current model which is now identical to M-3's claimed invention. However, Cargo argues that the models A and B differ only in regards to their mechanical set up, specifically the placement and tensioning of the cables. They further claim that these tasks are done by the customers themselves, and if A was installed according to Cargo's instructions like B, both models would be identical to and have the same components as M-3's claimed invention.

The first claim made by M-3 is that the product accused of patent infringement is not the same product as Defendants assert is prior art anticipating patent. M-3 is claiming that the Ramp-Heister marketed by Cargo prior to May 1995 differs from the product marketed by Cargo after May 1995, particularly in the location of cable mounting on the door and the manner of tensioning the cables. They claim that as a result of those differences, the two different versions of Cargo's products function differently. The Defendants argue that based upon these two chances in Cargo's design that no genuine issue of material fact exists.

First, the location of the cable mounting has nothing to do with whether Plaintiff s patent is valid. Nowhere in the claim is there any requirement that the cables be mounted at a specific location, it only requires that the cables be "attached to the door member." Under *Intervet Amer., Inc. v. Keevet Labs., Inc.,* [887 F.2d 1050 (Fed. Cir. 1989)] a court cannot alter what the patentee has chosen to claim as the invention. Furthermore, Cargo does not install the cables on the door. The Ramp Heister, including its cables, is installed by the trailer manufacturer. Cargo prepares instructions which advise the customer to install the cables nine inches from the top of the ramp door, but once the Ramp-Heister is shipped Cargo has no control over where the cables are mounted. For example, installation for model A's cables was performed by Haulmark.

Secondly, M-3 suggests Cargo has changed the way that it tensions the cables, but there is no indication as to what has changed. Again it is important to note that Cargo does not install the Ramp-Heister and that the actual tensioning is performed by the customer, which in the case of the model A was Haulmark. Cargo simply provides recommendations regarding the number of times that the springs should be wound to obtain the optimal counterbalancing force, but has no actual control over the adjustment of the springs.

This argument ties itself to Plaintiff's second claim, which is that the product made by the Defendant prior to May, 1995 and offered as prior art in their motion does not include a "counterbalancing means . . . wherein each spring element is tensioned so as to be able to independently restrain the door against opening once the door is in a closed position." Again, M-3 uses the illustrations of model A (the "prior art" model sold to Haulmark before 1995) and model B (Cargo's current model). M-3 argues that in model A the door is open several inches, indicating a significant amount of slack in the cable tension, whereas in model B the drum moves as soon as the door is opened at all, indicating no slack in the cable tension.

Cargo counterargues that if Haulmark had followed Cargo's installation instructions and: (1) mounted the cables nine inches from the top of the door ramp; and (2) properly tensioned the Ramp-Heister, the result of the videotape demonstration would have shown model A to be identical to model B. Thus, both the prior art model (A) and the model currently used by Cargo (B) would be identical to M-3's claimed invention if model A, like model B, was constructed according to the instructions by Cargo.

The third claim made by M-3 is that the product made by the Defendants prior to May, 1995 does not anticipate the invention claimed in the subject patent. "Anticipation under 35 U.S.C. Section 102 requires the disclosure in a single piece of prior art of each and every limitation of a claimed invention." *Rockwell International Corp. v. United States,* 147 F.3d 1358. 1363 (Fed. Cir. 1998). M-3 states that during prosecution of the patent application, the phrase, "wherein each spring element is tensioned so as to be able to independently restrain the door against opening once the door is in a closed position" was added to the claims by the Examiner Amendment in obtaining the Notice of Allowance. This is the specific element that M-3 claims Cargo did not have until after the

application for the patent had been filed. They farther claim that Cargo changed this precise element in their own product after the introduction of M-3's product into the market in 1995 and drastically increased their volume of sales due to the change. M-3 asserts that Cargo's product made prior to 1995 does not anticipate the changes made to their current model which is a replica of M-3's patented model.

However, Cargo argues that both the location of the cables and the manner of tensioning were prior art which anticipated Plaintiff's patent as a matter of law. A reference anticipates a claim if it discloses the claimed invention "such that a skilled artisan could take its teachings in combination with his own knowledge of the particular art and be in possession of the invention." *In Re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990). Prior to the use of dual spring counterbalances, cargo trailer manufacturers used single spring counterbalances. Gordon Mills testified that Wells Cargo used Cargo's instructions to assist in the installation of both single and dual spring Ramp-Heisters. (Deposition of G. Mills, pp. 39-42). Moreover, Gordon Mills testified in his deposition that there is no difference between the tensioning of a single spring counterbalance and a dual spring counterbalance. Finally, Mr. Mills testified that the tensioning of the counterbalances for ramp doors is the same as the tensioning of garage door counterbalances, which Coble, with his previous experience could have anticipated (Deposition of G. Mills, pp. 42-43). Thus, Cargo argues that because there is no difference in the tensioning of the single and dual counterbalances and because the same tensioning is used in garage doors, this qualifies as prior art that could be anticipated.

The main controversy lies in whether the ramp door designed and manufactured by Cargo and sold to Haulmark in 1994, before the application for the patent in 1996 by M-3, could have independently kept the door from opening once closed (prior art), or if this was an exclusive feature that

could not have been anticipated and was used by Cargo only after M-3's design was produced and patented. The function of keeping the doors from opening once closed derives from the location of the cables and the manner in which the cables are tensioned. The specific locations and manner of tensioning are only recommended by Cargo and actually determined by individual customers. This shows that different functions, such as keeping the door from opening once closed, can be obtained by different positioning of the equipment. Also, no differences seem to exist between either of the Cargo models (A&B) and M-3's claimed invention model in regards to parts and components. The only discrepancy that there seems to be between model A and B in comparison to M-3's model is in the way the equipment is positioned and located. It was even stated that if model A had been installed according to Cargo's instructions like model B, the two would have been identical. Therefore, if model A, which was sold to Haulmark in 1994 would have had the cables mounted and tensioned as model B was, which is identical to M-3's claimed invention model, all three models would have looked and operated the same. The evidence construes no difference between the single spring counterbalance and the dual spring counterbalance other than there is one spring in the single and two springs in the dual. They are both used for the same purpose and are instructed to be assembled the same way. The dual spring was simply a counterbalance that could be used for larger trailers for which there was an increasing demand.

John Coble, CEO of Cargo Systems, Inc., began designing, manufacturing, and selling single spring counterbalances in 1989, and went on to do the same in regards to dual spring counterbalances in the early 1990's, and specifically to Haulmark in 1994. Finding no differences between the single and dual spring counterbalances other than the number of springs, and finding no difference between Cargo's model A and B other than the location of the cables and the manner in which they

are tensioned (which are not installed by Cargo), it can be determined that the claimed invention of M-3 had been sold by Cargo at least one year prior to the application for patent, as required under 35 U.S.C. Section 102(b). The evidence also shows that if the model sold to Haulmark (A) had been installed according to Cargo's instructions, it would have operated identically to Cargo's current model (B) which M-3 is claiming infringed on its patent rights. Model A was sold to Haulmark in 1994, within the time frame of one year set forth by 35 U.S.C. Section 102(b). Also, due to Coble's past experience with garage doors, which worked in the same manner as ramp doors, it is clear that Coble anticipated the design for the Ramp-Heister.

## IV. CONCLUSION

Therefore, for the reasons stated above, the defendant's motion for summary judgment is hereby GRANTED. This court now FINDS the No. 5,768,828 patent to be invalid. The motion to strike is also GRANTED. The clerk shall enter the judgment accordingly.

IT IS SO ORDERED.

DATE: August 11, 2000

ALLEN SHARP, JUDGE
NORTHERN DISTRICT OF INDIANA

**United States Court of Appeals**
**for the Federal Circuit**

**00-1572**

**M-3 & ASSOCIATES, INC.,**

**Plaintiff-Appellant,**

**v.**

**CARGO SYSTEMS, INC. and PREFERRED FINISHING, INC.,**

**Defendants-Appellees.**

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**ENTERED: June 11, 2002**

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**ORDER**

Before MAYER, chief Judge, BRYSON, Circuit Judge, and DYK, Circuit Judge.

A petition for rehearing having been filed by the APPEALLANT,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for rehearing be, and the same hereby is, DENIED.

The mandate of the court will issue on June 18, 2001.

FOR THE COURT,

Jan Horably
Clerk

Dated: June 11, 2002

cc: Ryan M. Fountain
Michael J. McKeon

M-3 & ASSOCIATES V CARGO SYSTEMS, 00-1572
(DCT - 99-cv-547)

Note: Pursuant to Fed. Cir. R. 47.6, this order is not Citable as precedent. It is a public record.

**United States Patent** **Patent Number: 5,768,828**
**Wilson** **Date of Patent: June 23, 1998**

# COUNTERBALANCING MECHANISM

Inventor: **Randy Dale Wilson**, 59725 County Rd. 9 South, Elkhart, Ind. 46517

Appl. No. **655,619**

Filed: **May 30, 1996**

**Int. Cl.**[6] ..... **E05F 1/10**
**U.S. Cl.** ..... **49/386**: 49/197
**Field of Search**.....49/197. 199. 200
49/371. 386. 322; 296/57.1. 61; 414/537. 538

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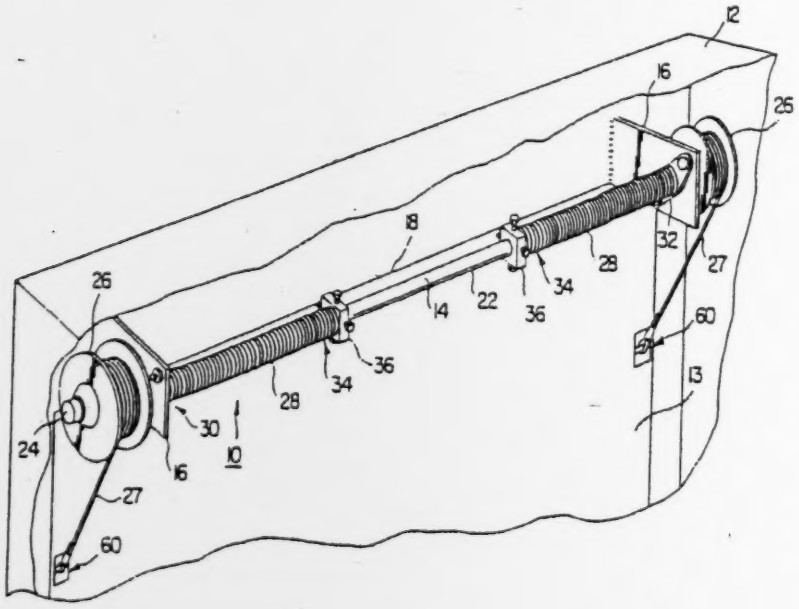
*Primary Examiner*—Kenneth J. Dorner
*Assistant Examiner*—Curtis Cohen
*Attorney, Agent, or Firm*—Ryan M. Fountain

## ABSTRACT

A Counterbalancing mechanism for counterbalancing the weight of a door securing an opening in an enclosure. The mechanism has a pair of bearing plates mounted on the wall of the enclosure which rotatably supports a tubular shaft extending therebetween. A pair of spools, each having a cable wound thereon which is attached to the door, are mounted at the ends of the tubular shaft for rotation therewith. A pair of springs, each attached at one end to the tubular shaft and at the other end to a respective bearing plate, extend coaxially about the tubular shaft between the bearing plates to exert a counterbalancing force on the tubular shaft opposing the weight of the door which is transferred to the tubular shaft through the cables and spools. Since each of the springs generates approximately one-half of the necessary counterbalancing force, the door will remain partially counterbalanced even if one of the springs fails


**4 Claims, 5 Drawing Sheets**



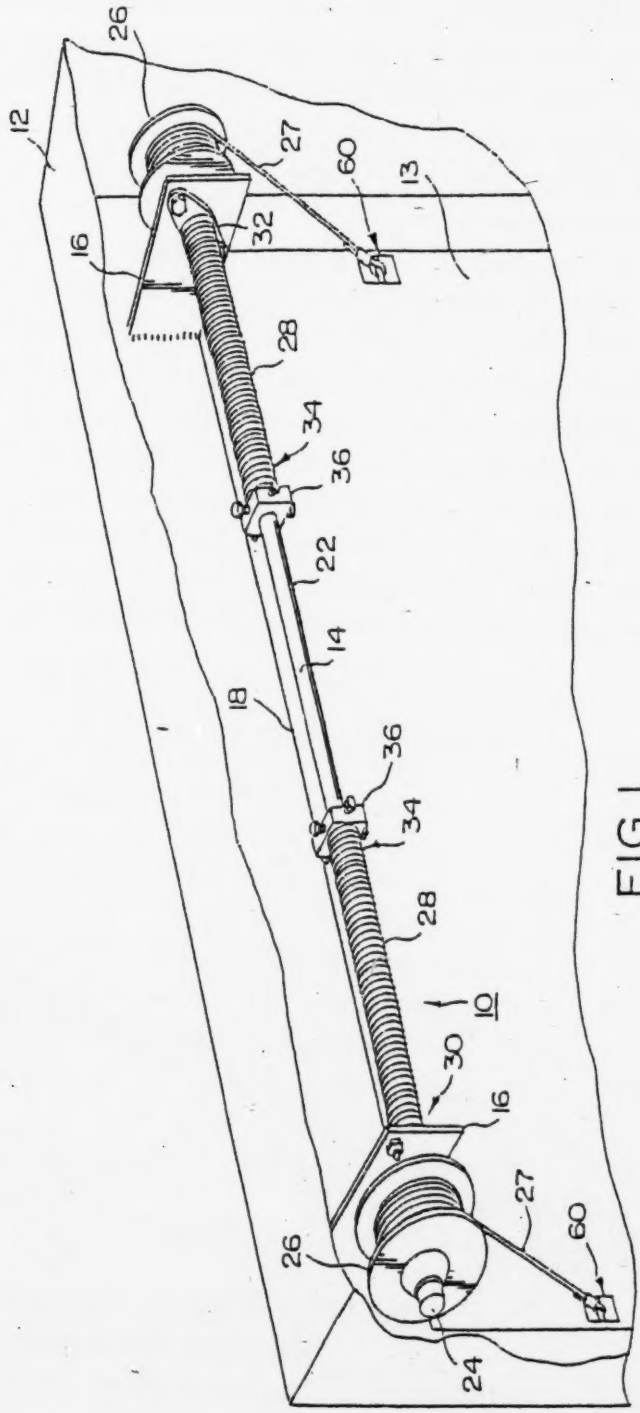



FIG. 1

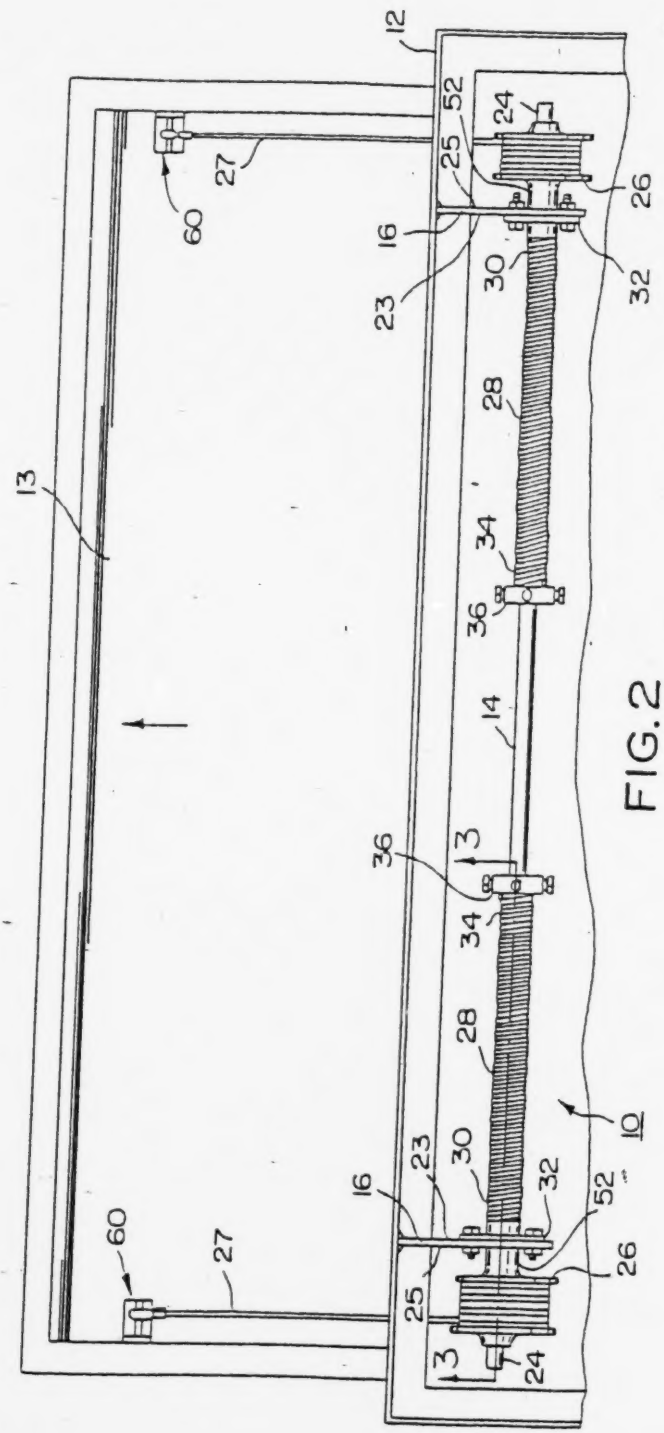



FIG. 2

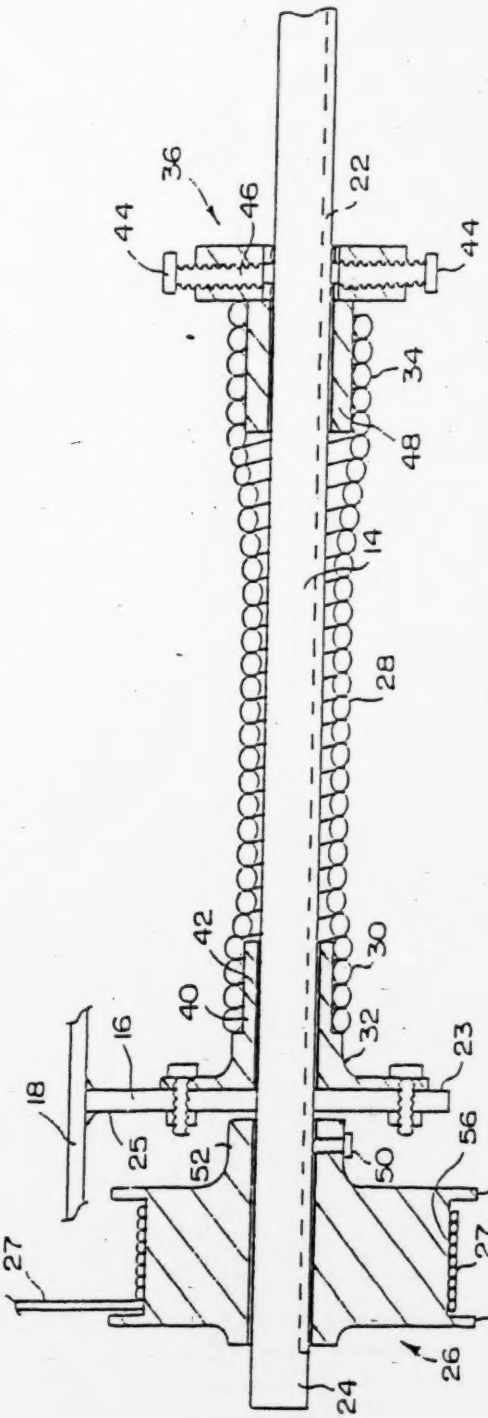

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FIG. 3

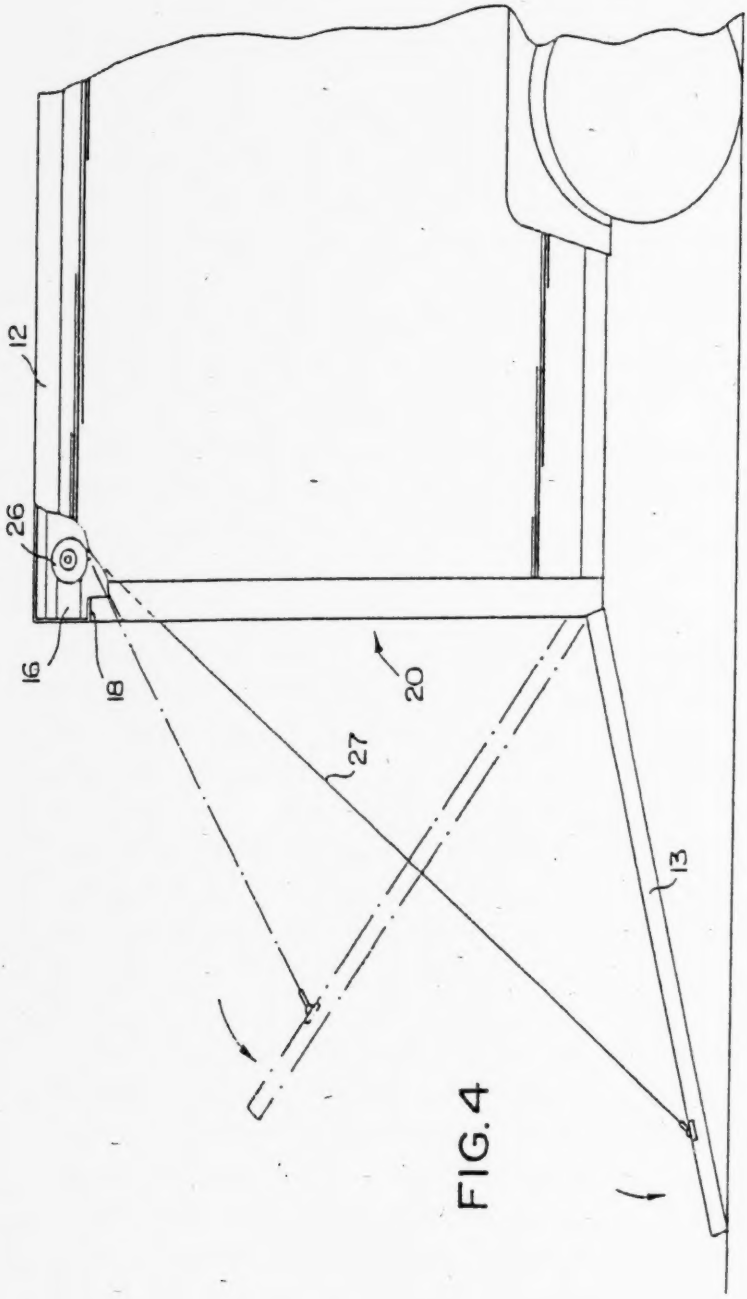


FIG. 4

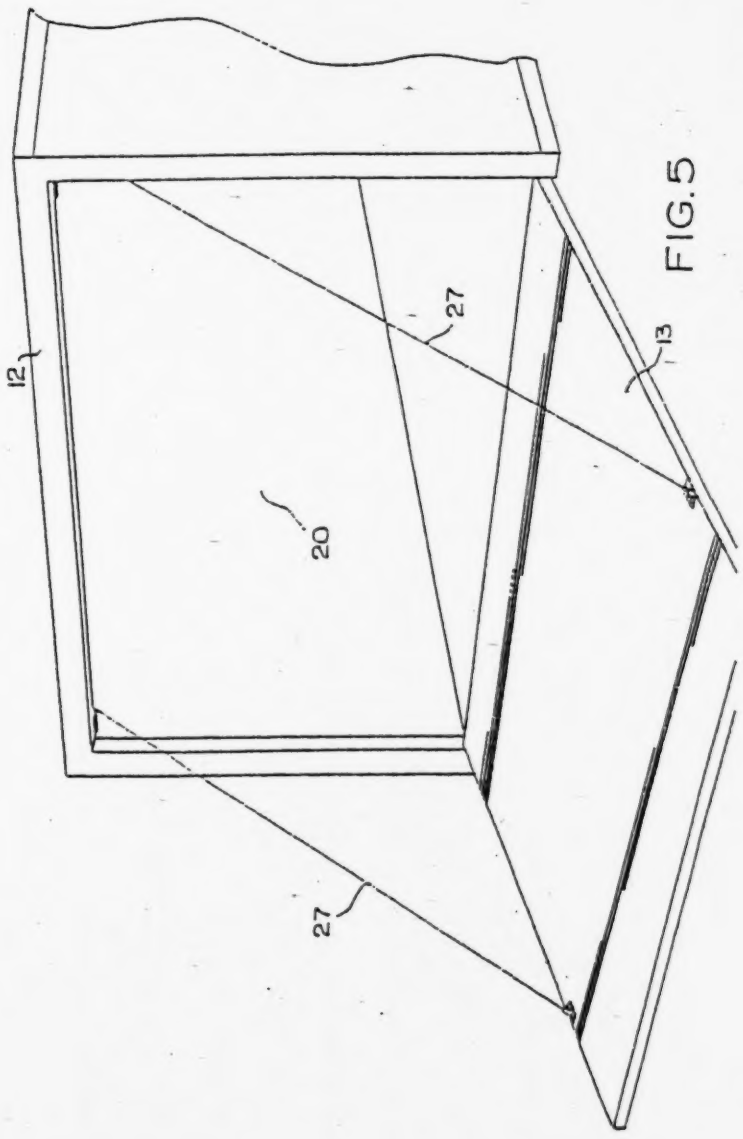


FIG.5

# COUNTERBALANCING MECHANISM

The present invention relates to a mechanism for counterbalancing the weight of a door or hatch as it is opened and closed.

## BACKGROUND OF THE INVENTION

Various enclosures including trailers have doors which also serve as access ramps. Typically, the lower edge of such doors is hinged, allowing the door to swing from a vertical closed position to an open position in which the upper edge of the door rests on the ground, the door thereby providing a ramp for easy access to the interior of the enclosure. Often, heavy loads, such as vehicles, travel across such ramps. Thus, to provide the necessary structural integrity, the doors are generally quite heavy. As such, a mechanism is needed to resist the tendency of the doors to slam downwardly with great force during opening or closing.

Conventional mechanisms are undesirable because they employ a single spring, or two springs which operate in conjunction with one another, to generate the counterbalancing force. Very heavy doors require a spring capable of withstanding extremely high torsional force without permanently deforming, loosing its resiliency or breaking. Such large springs are difficult and expensive to obtain. Also, adjusting a single large spring to ensure proper torsional resistance over the range of movement of the door is difficult.

A fundamental problem with conventional counterbalancing mechanisms relates to safety. Since only one spring supports the weight of the door, a spring failure could be disastrous. The doors are typically opened by pulling the door from the top as from a handle or chain, outwardly from the enclosure. The operator typically stands below the door as the top pivots outwardly, then moves from

under the door as it approaches a horizontal attitude. Similarly, such doors are pushed into a vertical, closed position by walking under the door toward the enclosure. If a spring fails or becomes disconnected from the shaft during opening or closing, the full weight of the door swings downwardly onto the operator below, potentially resulting in serious injury or death.

## SUMMARY OF THE INVENTION

The present invention provides an economical, safe, dual spring mechanism for counterbalancing a ramp door for an enclosure such as a cargo trailer. The invention comprises, in one form thereof, a tubular shaft transversely suspended adjacent the upper edge of the door cable opening between bearing plates. The tubular shaft carries two spools of wound cable. Each is attached to the upper part of the door. A pair of springs are coaxially disposed about the tubular shaft between the bearing plates. One end of each spring is attached to a respective bearing plate, and the other end is attached to the tubular shaft. When the door is opened, the cables unwind which causes the spools, and thus the tubular shaft, to rotate in a direction opposing the bias of the springs. The weight of the door is thereby relieved by the torsional resistance of the springs.

Adjustment of the dual spring mechanism of the present invention to provide proper torsional resistance over the range of movement of the door is easier than adjustment of a single spring mechanism. Also, each spring operates independently. This provides redundancy which greatly enhances the safety of the mechanism. If one spring fails, the remaining spring continues to resist downward movement of the door, giving the operator time to avoid injury.

Additionally, the counterbalancing mechanism of the present invention facilitates adjustment of the initial bias of

the springs. The cables connected to the door wind onto and off of the spools from the bottom as opposed to over the top. Thus, the spring bias is in a direction to rotate the tubular shaft such that the cables wind onto the spools from the bottom. To accomplish this bias, the spring ends attached to the tubular shaft are rotated with a lever from the inside of the enclosure to the outside so that the reaction force rotates the spools in a direction to pull the cables inwardly. Since the initial bias is set with the door in a substantially horizontal, fully opened position, the operator can advantageously swing the adjustment lever arm nearly 180 degrees around the tubular shaft from the top of the enclosure, through the opening, and outwardly away from the enclosure.

Accordingly, it is an object of the present invention to provide an improved mechanism for counterbalancing a door.

Another object of the invention is to provide a counterbalancing mechanism that utilizes inexpensive, readily available springs.

Another object of the invention is to provide a counterbalancing mechanism with independently operable springs for enhanced safety.

## BRIEF DESCRIPTION OF THE DRAWINGS

The above-mentioned and other objects and advantages of this invention, and the manner of attaining them, will become more apparent and the invention will be better understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a fragmented, perspective view of the counterbalancing mechanism of the present invention.

FIG. 2 is a fragmented top plan view of the mechanism shown in FIG. 1.

FIG. 3 is a fragmented cross-sectional view taken along line 3-3 of FIG. 2.

FIG. 4 is a fragmented side view depicting the operation of an access door counterbalanced by the present invention.

FIG. 5 is a fragmented perspective view similar to FIG. 4.

Corresponding reference characters indicate corresponding parts throughout the several views. The exemplification set out herein illustrates one embodiment of the invention, and such exemplification is not to be construed as limiting the scope of the invention in any manner.

## DESCRIPTION OF THE INVENTION

FIG. 1 shows the counterbalancing mechanism 10 of the present invention mounted to a trailer 12 adjacent the trailer access door 13. Mechanism 10 includes a rod or tubular shaft 14 which extends through and is supported between two bearing plates 16 mounted to the interior of trailer enclosure 12 adjacent the door opening 20. Tubular shaft 14 extends substantially the full width of opening 20. Bearing plates 16 include facing surfaces 23 and opposite surfaces 25 and extend perpendicularly inwardly toward the interior of trailer 12 from the upper edge 18 of the trailer back wall forming opening 20. The end portions 24 of tubular shaft 14 that extend through bearing plates 16 further extend through spools 26 which are attached to tubular shaft 14. Each spool 26 carries a cable 27 which is attached to door 13 in a manner described in detail below.

Two coil springs 28 are disposed coaxially about tubular shaft 14 between facing surfaces 23 of bearing plates 16 as shown in FIGS. 1 and 2. Each spring 28 is connected at one end 30 to a bracket 32 and at the other end 34 to a bearing cone 36. As best shown in FIG. 3. bracket 32 includes a cylindrical shoulder 40 defining bore 42 which receives tubular shaft 14. Bracket 32 is connected to bearing plate 16 using common fasteners. The outside diameter of cylindrical shoulder 40 is slightly larger than the nominal inside diameter of spring 28 to provide a press or friction fit of spring 28 onto shoulder 40.

Each bearing cone 36 includes a plurality of screws 44 which extend through threaded bores 46 into frictional engagement with tubular shaft 14. At least one set screw 44 extends into tubular shaft 14 to prevent rotation of cone 36 relative to tubular shaft 14. Each bearing cone 36 also includes a cylindrical shoulder 48 of similar size and function as cylindrical shoulder 40 extending from bracket 32. End 34 of each spring 28 fits over a respective shoulder 48 in a friction fit.

Each spool 26 is coaxially disposed about tubular shaft 14 and held in fixed relationship thereto by set screw 50 which extends through annular spacer portion 52 and is received by groove 22. Spools 26 are attached to end portions 24 of tubular shaft 14 such that the distance between annular spacer portions 52 is slightly greater than the distance between the opposite surfaces 25 of bearing plates 16. As such, tubular shaft 14 rotates freely, yet spacer portions 52 center tubular shaft 14 between bearing plates 16. Spools 26 include circular walls 54 which extend radially outwardly from tubular shaft 14 and are connected together by a cylindrical web 56. A cable 27 is connected at one end (not shown) to each web 56, wound about web 56 between walls 54, and connected at the other end to a connection location 60 disposed adjacent the upper edge of

door 13. Cables 27 are wound about webs 56 such that the cables 27 wind onto and off of spools 26 from the bottom. As shown in FIG. 4, by being so wound, cables 27 avoid interference with upper edge 18 of opening 20.

## Mode of Operation

The counterbalancing mechanism 10 of the present invention, once installed, is adjusted for operation by imparting an initial spring bias to tubular shaft 14. With door 13 in a substantially horizontal, open position as shown in FIGS. 4 and 5, spools 26 are rotated about tubular shaft 14 until cables 27 extend tightly from connection locations 60. Then, spool 26 set screws 50 are tightened to secure spools 26 to tubular shaft 14. The initial spring bias is generated by rotating bearing cones 36 about tubular shaft 14 in a clockwise direction relative to the view of FIG. 4 to create a counter-clockwise reaction force which further tightens cables 27. Bearing cones 36 are further rotated until the spring counterbalancing force is nearly sufficient to lift or raise door 13. The spring configuration of the present invention advantageously permits initial tightening of springs 28 by rotating a tightening tool from within the enclosure 12 outwardly about bearing cones 36. Also, bearing cones 36 are advantageously rotated in the same direction. Once springs 28 are tightened, bearing cones 36 are secured to tubular shaft 14 by screws 44 and the door 13 is lifted, with the aid of the spring force, into a vertical, closed position.

As door 13 is lifted, since ends 30 of springs 28 are fixed to the wall of the enclosure 12 through brackets 32 and bearing plates 16, ends 34 of springs 28 impart torque onto bearing cones 36 to rotate tubular shaft 14. Spools 26 rotate accordingly, and cables 27 wind under spools 26 onto webs 56. As door 13 is further lifted, springs 28 continue to uncoil and provide counterbalancing lifting force. However, a door

13 arcs upwardly toward opening 20 about its hinged or pivotal connection to the lower edge of opening 20 (not shown), the counterbalancing spring force diminishes according to principles well known by those skilled in the art.

When door 13 reaches a vertical, closed position, cable 27 are recoiled tightly around spools 26 as shown in FIG. 1. Even though, as door 13 is lifted into the closed position tubular shaft 14 experiences multiple rotations which uncoil springs 28 from their initial tightened state, springs 21 continue to exert residual torsional force on tubular shaft 14.

When door 13 is pulled outwardly and down toward an open position, cables 27 unwind from the bottom of webs 51 and spools 26 rotate. The spool rotation causes tubular shaft 14 to rotate accordingly. As tubular shaft 14 rotates, attached bearing cones 36 also rotate and tighten ends 34 of spring 28. As door 13 is further lowered, springs 28 become increasingly deformed and impart increasing torsional force to tubular shaft 14 in a direction to counterbalance the weight of door 13. When door 13 is fully lowered, spring 28 are returned to the predetermined initial bias which corresponds to a counterbalancing force sufficiently low to permit the door to remain lowered under its own weight but sufficiently high to enable manual lifting of the door.

It will be noted that each of the springs 28 exert substantially the same force on tubular shaft 14, and that this force is approximately one-half of the force necessary to counterbalance door 13. Accordingly, door 13 remains partially counterbalanced even in the event that one spring 28 breaks so that a closed door 13 will remain closed instead of dropping immediately to the open position. Furthermore, if a spring 28 breaks when door 13 is being opened or closed door 13 will drop to the open position, but with less force

than would be the case using a single spring system, an important safety feature of the present invention.

As should be apparent from the foregoing, one skilled ii the art could easily adapt the counterbalancing mechanism of the present invention to counterbalance various door incl uding garage doors, downwardly opening hatches, gate ways and other types of enclosure access means. Accordingly, while this invention has been described a having an exemplary embodiment, this application is intended to cover any variations, uses, or adaptations of this invention falling within the spirit and scope of this disclosure using its general principles. Further, this application is intended to cover such departures from the present disclosure as come within known or customary practice in the at to which this invention pertains and which fall within the limits of the appended claims.

What is claimed is:

1. An apparatus closing an opening in a wall, comprising:

a door member hinged to the wall adjacent the bottom o the opening so as to permit upward pivotal movement of the door member to close the opening.

a plurality of cables attached to the door member and connected to the wall adjacent the top of the opening.

counterbalancing means, connected to the wall adjacent the top of the opening, for applying force to the cable to at least in part counterbalance the weight of the door member and thereby facilitate movement of the door member about the hinge, and

the counterbalancing means including at least two sprint elements, each of which independently applies a portion of the force to each of the cables, wherein each spring element is tensioned so as to be able to independently restrain the door against opening once the door is in a closed position.

2. The apparatus according to claim 1 wherein the counterbalancing means includes a common drive shaft connected to each of the spring elements, and a plurality of spools means, mounted on the shaft at spaced apart locations, each for winding and unwinding one of the cables thereon from the lower portion of the spool.

3. The apparatus according to claim 2 wherein the spring to elements are tensioned so as to provide progressively less counterbalancing force to the cables as the door pivots toward a closed position.

4. The apparatus according to claim 3 wherein the opening is disposed within a wall of a vehicle body to provide access thereto, that vehicle having a floor and a ceiling portion, the bottom of the opening being adjacent the floor and the top of the opening being below the ceiling, the interior space therebetween defining a receptacle for containing counterbalancing means.

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